


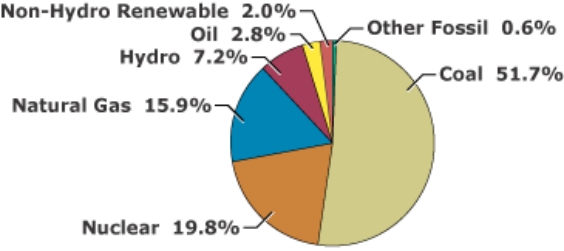
Climate Action at the CPUC

presented at
Wisconsin Public Service Commission

Molly Tirpak Sterkel
Energy Division
California Public Utilities Commission (CPUC)
March 10, 2005
mts@cpuc.ca.gov
415-703-1873

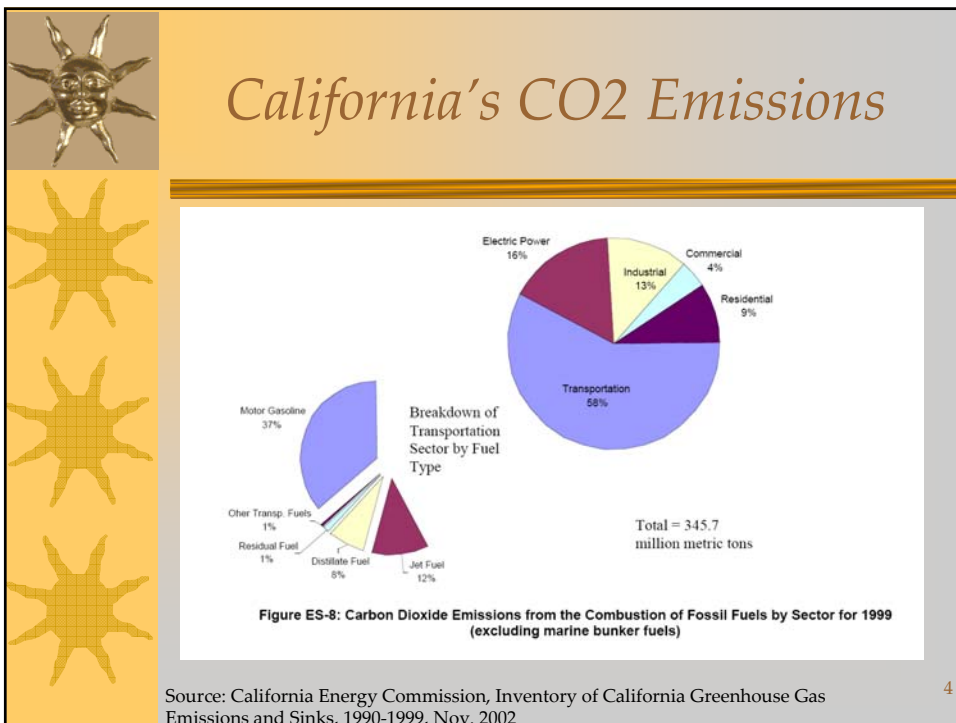
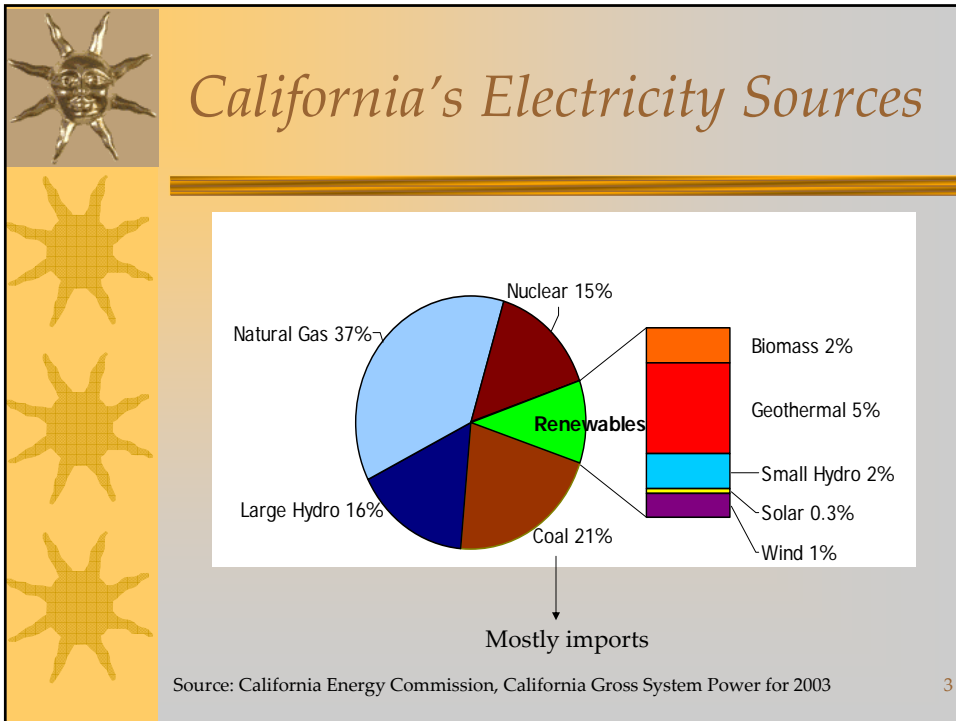


Current U.S. Electricity Mix



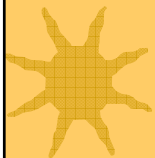
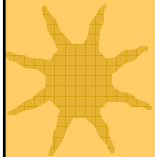
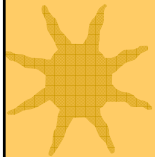
Source	Percentage
Coal	51.7%
Nuclear	19.8%
Natural Gas	15.9%
Hydro	7.2%
Oil	2.8%
Non-Hydro Renewable	2.0%
Other Fossil	0.6%

Source: EPA's Power Profiler





Climate Change & CPUC



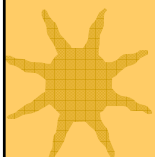
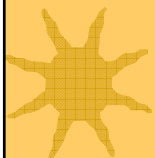
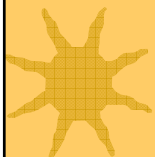
- California Energy Action Plan¹ (Oct-2005)
 - Establishes a “Loading Order”
 - EE
 - Demand Response
 - Renewables
 - Other/Fossil
 - Least/Cost Best Fit
- Climate Change En Banc (Feb- 2005)
 - Affirmed statewide consistency of vision & policy
 - Utilities reported on Climate Change activities

Source: Energy Action Plan available at <http://www.cpuc.ca.gov/PUBLISHED/REPORT/51604.htm>

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Governor's Executive Order



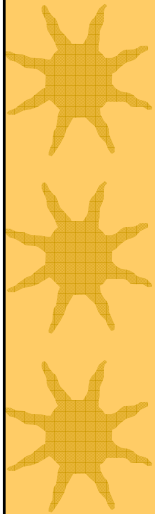
Executive Order S-3-05

- On June 1, 2005, the Governor established greenhouse gas emission reduction targets for the State of California.
- The goal is to “by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; by 2050, reduce GHG emissions to 80 percent below 1990 levels”.

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Governor's Remarks on Climate



It is not enough to be the caretaker of the world we have been given. We must leave a better world for our children and their children. In decades past when we brought this damage to the world around us we didn't know any better. That was our mistake. But now we do know better. And if we do not do something about it that will be our injustice. So we will take the next big step here in California and mobilize with an aggressive plan to reduce greenhouse gas emissions.

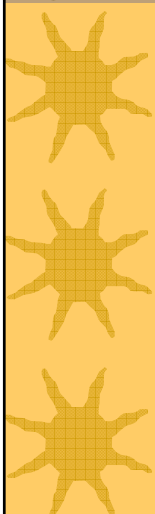


June 2005

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Energy Efficiency



- CPUC approved \$2 billion in budgets for 3 years of energy efficiency programs

**2006-2008 Energy Efficiency Budget
and Projected Savings**

	Budget	Projected Savings (Electricity and Natural Gas)		
	(In Million)	GWH	MW	MTH
PG&E	\$ 867	3,020	562	51,756
SCE	\$ 675	3,292	714	-
SDG&E	\$ 258	1,022	213	9,537
SCG	\$ 169	-	-	60,696
Total	\$ 1,969	7,334	1,489	121,989

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Electricity Usage Per Capita

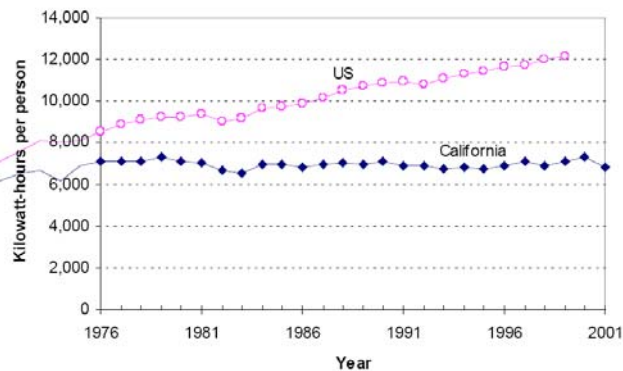


Figure ES-3: California and United States Electricity Use per Capita Trends since 1976

Source: California Energy Commission, Inventory of California Greenhouse Gas Emissions and Sinks, 1990-1999, Nov. 2002

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Renewable Portfolio Standard

- The **Renewables Portfolio Standard (RPS)** – mandates 20% renewables by 2017
 - Each load serving entities (LSE) must increase its use of renewables by 1% of retail sales per year until 20% is reached by 2017.
- **Energy Action Plan** accelerates the RPS target year from 2017 to 2010.
- Municipal utilities are directed to develop a program that achieves the same goals, but are not obligated to report their progress to any state agency.

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Status of Renewables 2005

- The actual RPS generation and actual and contracted deliveries for 2005 is 13% of IOU retail sales.

RPS Generation – 2005 (Actual)		
IOU	2005 RPS %	2005 Generation
SDG&E	5.2%	830 GWh*
SCE	17.1%	12,920 GWh*
PG&E	11.9%	8,650 GWh*
Total	13.7%	22,400 GWh*

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New California Solar Initiative

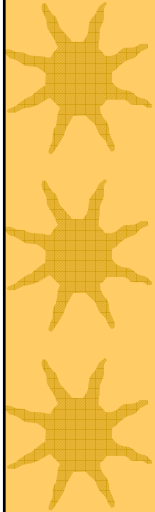
- CPUC adopted on 1/12/06
 - Provides up to \$3.2 billion for PV and solar thermal projects through 2017
 - Existing residential buildings
 - Single-family homes
 - Low-income
 - Multi-family apartments
 - All commercial buildings
 - Schools
 - State buildings
 - All industrial facilities
 - All agricultural facilities



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Other IOU Procurement

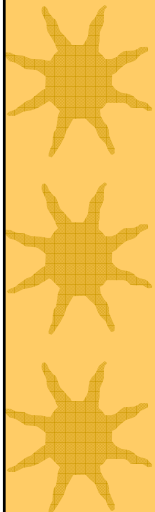


- Energy Crisis
 - Legislation put investor-owned utilities (IOUs) back in the procurement planning paradigm
- Procurement Paradigm
 - Use Loading Order
 - Use Least Cost/Best Fit
 - Pre-approved 'procurement plans'
 - Short term (<5 years): Emphasis is on up-front, not after the fact reasonableness reviews
 - Long term (>5 years): Requires CPUC approval

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Greenhouse Gas (GHG) Adder



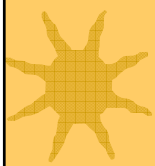
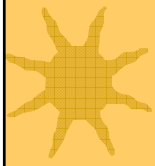
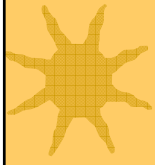
- CPUC regulatory requirement
 - Adopted in 2004, when CPUC approved long-term plans, which includes procurement policies and practices*
 - Applies to any long-term procurement (>5 years) done by IOUs
 - IOUs must apply greenhouse gas adder in long-term contract evaluation
- Application to date
 - GHG value is added to prices bid in procurement RFOs (Requests for Offers = RFO)
 - Limited use b/c only 2 RFOs have been conducted
 - Long-term has only been for "new" generation contracts, but could apply to existing generation

* = CPUC Decision D.04-12-048

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Greenhouse Gas (GHG) Adder continued



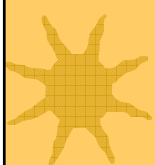
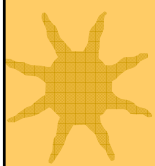
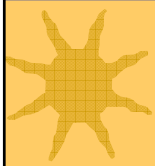
- Value of GHG Adder
 - CPUC adopted a \$8/ton value, with an escalation of + ~5% year
 - Value came from CPUC's Avoided Cost Rulemaking*
 - Value varies based on fuel type, type of technology, and estimated capacity factor for project
 - Effectively increases the variable operating costs during bid review process
- Pros/Cons
 - Accounts for uncertainty/financial risk associated with greenhouse gas emissions
 - Does not make substantial difference if all offers are of the same fuel type
 - May appear slightly counter-intuitive if results shown in the \$/kW year (plants with higher capacity factors have higher CO2 adder amounts)

* Source: Methodology and Forecast of Long Term Avoided Costs for The Evaluation of California Energy Efficiency Programs, available at http://www.ethree.com/CPUC/E3_Avoided_Costs_Final.pdf

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Numerical Example of GHG Adder



Factor	Units	Formula	Combined	
			Cycle Plant	Combustion Turbine
Gas Price	\$/MMBtu		\$5	\$5
CO2 Price	\$/ton		\$10	\$10
CO2 Price	\$/lb	(=10/2000)	\$0.005	\$0.005
Emissions factor	lbs/MMBtu		117	117
Heat Rate	MMBtu/MWh		7	11
Emission Rate	lbs/MWh	(=Emissions factor * heat rate)	819	1287
Emissions Cost	\$/MWh	(=Emissions rate * CO2 price)	\$4	\$6
Fuel Cost	\$/MWh	(=Heat rate * Gas price)	\$35	\$55

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Example, cont.

Annualized

Capacity Factor	%		60%	10%
Fuel	\$/kW	(Fuel cost* 8760 * capacity factor)/1000	\$184	\$31
CO2	\$/kW	CO2 cost* 8760 * capacity factor)/1000	\$22	\$6

For a 500 MW Plant

	Fuel Cost		\$91,980,000	\$15,330,000
	CO2 Cost		\$10,761,660	\$2,818,530

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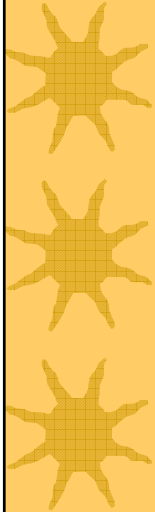
Other Procurement

- Procurement policy on GHG
 - Adopted October 2005;
http://www.cpuc.ca.gov/word_pdf/REPORT/50139.pdf
 - Orders “investigate adoption by the PUC of a greenhouse gas emissions performance standard for IOU procurement that is no higher than the GHG emissions levels of a state-of-the-art, combined-cycle natural gas turbine for all procurement contracts that exceed three years in length”
- Procurement Incentives decision
 - Adopted February 2006;
http://www.cpuc.ca.gov/word_pdf/COMMENT_DECISION/52819.pdf
 - Caps GHG emissions of load-serving entities, including IOUs
 - Offers potential of incentives for “going beyond” all the other existing regulatory rules
 - To be implemented via a new proceeding

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Other Procurement

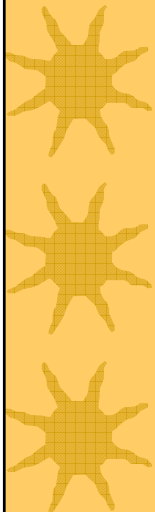


- PG&E Application for “Carbon Protection Tariff”
 - A voluntary product, customers will pay small amount extra on utility bill and will buy forestry-based offsets for electricity customers
 - Filed January 2006, will be decided in second half of 2006
 - Application Filed as A.06-01-012;
https://www.pge.com/regulation/ClimateProtectionTariff/Pleadings/PGE/2006-01-Fwd/ClimateProtectionTariff_Plea_PGE_20060124-01.pdf

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Looking Forward

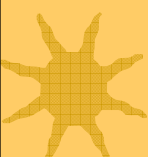



- Climate Action Team Report to Governor
 - http://www.climatechange.ca.gov/climate_action_team/reports/index.html
- Work on making progress on EAP & Climate related goals
 - Continuing to implement the RPS
 - Continuing to implement a Self-Gen program
 - Continuing to implement EE programs
 - Continuing to refine use of greenhouse gas adder in procurement review
 - Open proceeding to implement procurement incentives decision capping GHG emission portfolios by load-serving entity


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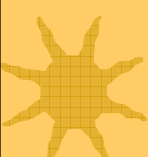

Background Information

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Electricity Resources: CA vs US

Source	CA (%)	USA (%)
Imports	~15%	~1%
Wind/Solar	~1%	~1%
Biomass	~1%	~1%
Geothermal	~2%	~1%
Hydroelectric	~10%	~10%
Nuclear	~15%	~15%
Natural Gas	~35%	~15%
Petroleum	~0.02%	~1%
Coal	~1.3%	~50%
Other	~0%	~1%

CA: 275,792 GWh
USA: 3,691,000 GWh

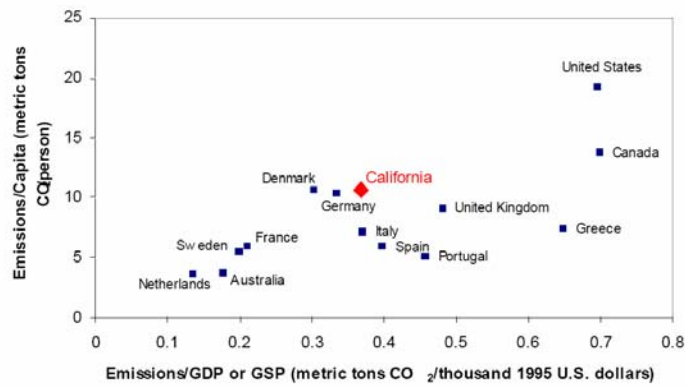
Figure ES- 2: Distribution of Electric Generation Sources in California and United States in 1999

Source: California Energy Commission, Inventory of California Greenhouse Gas Emissions and Sinks, 1990-1999, Nov. 2002

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Emissions Per Capita

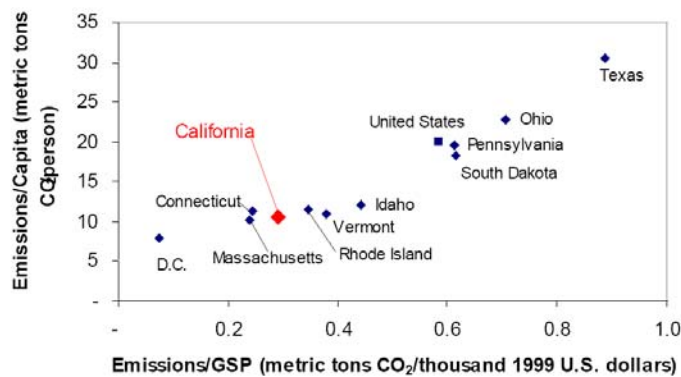


Source: California Energy Commission, Inventory of California Greenhouse Gas Emissions and Sinks, 1990-1999, Nov. 2002

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California in Context of US

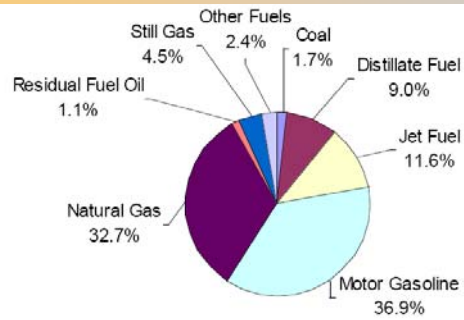


Source: California Energy Commission, Inventory of California Greenhouse Gas Emissions and Sinks, 1990-1999, Nov. 2002

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CO2 Emissions by Fuel Type



Total = 345.7 Million Metric Tons

**Figure ES-7: Carbon Dioxide Emissions by Fossil Fuel Type for 1999
(excluding marine bunker fuels)**

Source: California Energy Commission, Inventory of California Greenhouse Gas Emissions and Sinks, 1990-1999, Nov. 2002

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Fuel Consumption: CA vs. US

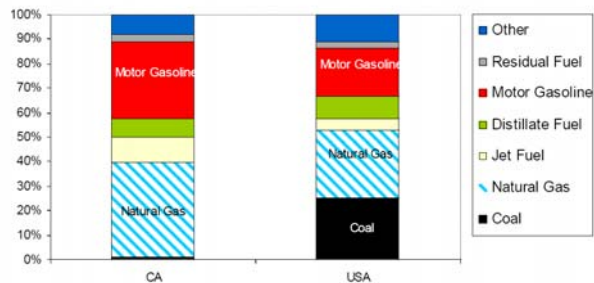


Figure ES-1: Distribution of Fossil Fuel Consumption in California and United States in 1999

Source: California Energy Commission, Inventory of California Greenhouse Gas Emissions and Sinks, 1990-1999, Nov. 2002

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